REMARKS

Status of Claims:

Claims 2, 7-15, and 17-21 are cancelled. Thus, claims 1, 3-6, and 16 are present for examination. Independent claim 1 has been amended with features that were previously in dependent claim 2. Independent claim 16 has been amended with features that were previously in dependent claim 17.

Claim Rejections:

Claims 1-10 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laughlin (U.S. Patent No. 5,553,175) in view of Manchester et al. ("IP over SONET") (hereinafter Manchester) and further in view of Ragavan et al. (U.S. Patent No. 4,811,394) (hereinafter Ragavan).

Claims 11-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laughlin in view of Manchester and further in view of Bright et al. (U.S. Patent No. 5,694,473) (hereinafter Bright).

Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laughlin, Manchester, and Bright, and further in view of Ragavan.

Claims 2, 7-15, and 17-21 have been cancelled. With respect to claims 1, 3-6, and 16, the rejections are respectfully traversed.

Independent claim 1 has been amended with features that were previously in dependent claim 2. Independent claim 1, as amended, recites a scramble control method for a switching system, said switching system comprising:

> a switch having input ports and output ports, said switch operative for switchably interconnecting said input ports with said output ports;
>
> a plurality of input interfaces each connected to a corresponding input port of the switch, each of the input interfaces including a scrambler, each scrambler having a pseudorandom pattern generator, wherein each of the input

interfaces inputs data to sequentially output frames including scrambled data to the corresponding input port of the switch; and

a plurality of output interfaces each connected to a corresponding output port of the switch, each of the output interfaces including a descrambler, each descrambler having a pseudorandom pattern generator, wherein each of the output interfaces inputs frames including scrambled data from the corresponding output port of the switch to output frames of original data, and wherein each of the pseudorandom pattern generators of the scramblers and the descramblers generates a same pseudorandom pattern when initialized with a same input value,

said scramble control method comprising the steps of:

"resetting the scramblers simultaneously to initialize the pseudorandom pattern generators of the scramblers with the same input value, so as to synchronize the scramblers;

resetting the descramblers simultaneously to initialize the pseudorandom pattern generators of the descramblers with the same input value, so as to synchronize the descramblers and to establish synchronization between the scramblers and the descramblers; and

continuously maintaining synchronization between the scramblers and the descramblers **when the switch performs a switching operation**;

wherein the scramblers are simultaneously initialized at a first time point and **thereafter are not reset**;

wherein the descramblers are simultaneously initialized at a second time point and **thereafter are not reset**; and

wherein the second time point is delayed from the first time point by a time period required for transferring a frame from an input interface to an appropriate output interface through the switch." (Emphasis Added).

Neither Laughlin, Manchester, nor Ragavan, alone or in combination, disclose or suggest a scramble control method including the above-quoted features.

The Examiner points to Laughlin as disclosing a switch, but the Examiner recognizes that Laughlin "failed to disclose scramblers at the inputs and descramblers at the outputs." (Office Action; pages 3-4). The Examiner then points to Manchester as disclosing a self-synchronizing scrambler at an optical transmitter and a corresponding descrambler at an

optical receiver. The Examiner recognizes that with the scrambler of Manchester, "upon startup or reframe the first 43 bits of data would be lost during synchronization". (Office Action; page 4) (Emphasis Added). The Examiner then points to Ragavan as teaching that, "in order to maintain synchronization between scramblers and descramblers, a new starting value should be transmitted from the scrambler to the descrambler every frame". (Office Action; page 5).

However, even if the scramblers and descramblers of Manchester were employed with the switch of Laughlin and were initialized with a starting value as disclosed in Ragavan, the resulting device would not allow for: (i) **continuously maintaining** synchronization between the scramblers and the descramblers when the switch performs a switching operation; where (ii) the scramblers are simultaneously initialized at a first time point and **thereafter are not reset**; and (iii) the descramblers are simultaneously initialized at a second time point and **thereafter are not reset**.

Instead, in the device resulting from the combination, once the values in the 43-bit shift registers of the scramblers and descramblers would be initialized with the starting value as disclosed in Ragavan, the values in the 43-bit shift registers would **change** for each scrambler based on transmitted data and would **change** for each descrambler based on received data. (Manchester; FIG. 4). Thus, the values in the 43-bit shift registers of the scramblers and the descramblers from Manchester would depend on the previously transmitted or received 43-bits once the scramblers begin to transmit actual data and the descramblers receive the data. (Manchester; FIG. 4).

Then, if the switch of Laughlin performs a switching operation, and a scrambler of Manchester begins transmitting data to a particular descrambler to which it was not previously transmitting data, then the value in the 43-bit shift register of the scrambler would be **different** from the value in the 43-bit shift register of the descrambler. (Manchester; FIG. 4). In order to maintain synchronization with the combined system after the switching operation, another starting value would have to be used to **re-initialize** the scrambler and the particular descrambler to which it is now transmitting data. However, the present claim recites the feature that, "the scramblers are simultaneously initialized at a first time point and

thereafter are not reset", and the feature that, "the descramblers are simultaneously initialized at a second time point and **thereafter are not reset**".

Moreover, in the combined system of Laughlin, Manchester, and Ragavan, if the scramblers and descramblers were not **re-initialized** after a switching operation of the switch, the combined system would not allow for, "**continuously maintaining synchronization** between the scramblers and the descramblers when the switch performs a switching operation". The system of Manchester is designed to work in a **one-to-one** configuration between **one** scrambler and **one** descrambler because both the scrambler and the descrambler can maintain synchronization based on bit strings of the past. However, in an optical switching system, a transmission source of a frame received from an output interface **varies every time the optical switch performs switching**. As a result, synchronization between a scrambler and a descrambler is lost when switching is performed, because a different scrambler would be transmitting data to the descrambler after switching is performed, but the new different scrambler would **not** be synchronized with the descrambler because the new different scrambler would not know the bit strings of the past.

Therefore, independent claim 1 is neither disclosed nor suggested by the Laughlin, Manchester, and Ragavan references and, hence, is believed to be allowable. The Patent Office has not made out a *prima facie* case of obviousness under 35 U.S.C. 103.

Independent claim 16 recites a switching system with features similar to features of a scramble control method of independent claim 1 and, thus, is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

The dependent claims are deemed allowable for at least the same reasons indicated above with regard to the independent claims from which they depend.

Conclusion:

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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